REMARKS

Claims 1 to 12 are currently pending in the present application. No new matter is added by the amendments.

The Office Action objects to the specification asserting that it is missing required headings. Applicants respectfully assert that MPEP §608.01(a) does not require the use of headings. As such, Applicants request that this objection be removed.

The Office Action objects to claims 1-12 asserting that various terms lack antecedent basis. Applicants have amended claims 1-11 which should obviate this objection.

Claims 1, 2, 7, 8 and 9 have been rejected by the Office Action under 35 U.S.C. § 112, second paragraph as being indefinite. Applicants have amended claims 1, 2, 7, 8 and 9 which should obviate this objection.

Claims 1-12 have been rejected by the Office Action under 35 U.S.C. § 103(a) as being obvious over U.S. Patent 6,442,235 B2 to Koppe in view of U.S. Patent 7,180,976 B2 to Wink. Claims 1-12 include the feature of determining the concentration of the contrast agent within the vascular segments by evaluating an X-ray absorption within the local image. The Office Action asserts that Koppe describes this feature of claims 1-12. Applicants respectfully disagree.

Koppe describes imaging blood flow as a function of time. Koppe does not describe determining a concentration of contrast agent based on X-ray absorption:

> The invention is based on the recognition of the fact that an image data set, which may be a two-dimensional or a three-dimensional image data set and contains information concerning the course of the blood vessels in the object to be examined, can be encoded in time in such a manner that it also contains

> information concerning the blood flow as a function of time. Such encoding in time is performed according to the invention in that the image data set is compared with a series of X-ray projection images; these X-ray projection images are formed successively in time and contain the information concerning the distribution of an injected contrast medium in the blood vessels at each time a different instant. Because each X-ray projection image is individually compared with the image data set, that is, each image value of the image data set is compared with the image values of the individual X-ray projection images, it is quasi checked which parts of the vascular system contained in the image data set are filled with the contrast medium at the individual instants associated with the respective X-ray projection images. Using suitable reproduction methods, the image data set thus encoded in time can be converted into one or more images which show the blood flow as a function of time. (Koppe col. 1, line 48 to col. 2, line 3)(emphasis added).

Koppe further describes its process as the monitoring of which segments of the vascular system to which the contrast medium has progressed:

> In simplified form it may be stated that in the steps 106 and 107 it is checked to what segment of the vascular system the contrast medium has progressed in a time interval between the formation of two X-ray projection images E.sub.j-1 and E.sub.j, or from what segment of the vascular system the contrast medium has drained during this time interval, and that the voxels in the reconstruction sub-image R' which represent the relevant vessel segment are marked accordingly and combined so as to form a voxel sub-set L.sub.j. These steps are carried out n times, that is, once for every difference image F.sub.j. This results in n voxel sub-sets L.sub.j wherefrom one or more images B can be formed in the step 108, said images representing the blood flow as a function of time. For example, the voxels of each voxel sub-set L.sub.j can be reproduced in a different color in an overall image. The method is terminated in the step 109. (Koppe col. 5, lines 17-32).

Moreover, Koppe does not evaluate the X-ray absorption by finding local image areas assigned to the individual vascular segments within the second set of X-ray projection images corresponding to spatial positions of the vascular segments in the respective phase

of the heart cycle where the recorded second ECG is used to assign the second set of X-ray projection images to the respective phase of the heart cycle, as in claims 1-12. Koppe is directed towards imaging blood flow as a function of time and there is no motivation to modify the Koppe device to obtain ECG information and then determine the concentration of the contrast agent based on the respective phase of the heart cycle.

In view of the foregoing, Applicants respectfully submit that the specification, the drawings and all claims presented in this application are currently in condition for allowance. Accordingly, Applicants respectfully request favorable consideration and that this application be passed to allowance.

Should any changes to the claims and/or specification be deemed necessary to place the application in condition for allowance, the Examiner is respectfully requested to contact the undersigned to discuss the same.

Respectfully submitted,

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